ELECTRIC

Date: September 23, 1985

MATERIAL SAFETY DATA SHEET NO. W2

For U.S. Manufactured Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. September 1985

SECTION I — IDENTIFICATION

Manufacturer/Supplier Name: The Lincoln Electric Company	Product Type: Carbon steel electrode
Address: 22801 St. Clair Avenue, Cleveland, Ohio 44117	Classification: EM13K, ER70S-3
Telephone No.: (216) 481-8100	

SECTION II — HAZARDOUS MATERIALS*

IMPORTANT!

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.

* The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard.

(CAS No.)	Wt %	TLV mg/m³**	Supplemental Information
Carbon steel wire	100	10*	(*) Not listed. Nuisance value maximum is 10 mg/m³.
Total copper including plated coating	less than 0.5	10*	

** OSHA PEL (Permissible Exposure Limit) Value limits are the same as TLV unless otherwise listed.

Other	Wt %	TLV mg/m³	

SECTION III — FIRE AND EXPLOSION HAZARD DATA

Non Flammable: Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section ...

SECTION IV — HEALTH HAZARD DATA

Threshold Limit Value:

The ACGIH recommended general limit for Welding Fume NOC — (Not Otherwise Classified) is 5 mg/m³. ACGIH-1985 preface states "The TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations." See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the *American Conference of Government Industrial Hygienists*. Units may be milligrams per cubic meter (mg/m³), millions of particles per cubic foot of air (mppcf), or parts per million of vapor or gas in air (ppm).

(Section IV continued on side two.)

Sizes: All
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SECTION IV — HEALTH HAZARD DATA continued

Effects of Overexposure

Electric arc welding may create one or more of the following health hazards:

Fumes and Gases can be dangerous to your health. Common entry is by inhalation.

Short-term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

Long-term (chronic) over-exposure to welding fumes can lead to siderosis (iron deposits in lung) and affect pulmonary function.

Arc Rays can injure eyes and burn skin.
Electric Shock can kill.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques. IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V — REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

...sonably expected fume constituents of this product would include: Primarily iron oxide and fluorides; secondarily complex oxides of aluminum, calcium, magnesium, manganese, potassium, silicon, sodium, titanium and zirconium when used with recommended Lincolnweld fluxes.
Primarily iron oxide; secondarily complex oxides of copper, manganese and silicon when used with gas shielding.

Maximum fume exposure guideline for this product is 5.0 mg/m^3.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample from inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes," available from the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126.

SECTION VI AND VII — CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, "Safety in Welding and Cutting" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida, 33126 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more detail on many of the following:

Ventilation

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection

Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection

Wear helmet or use face shield with filter lens shade number 12* or darker. Shield others by providing screens and flash goggles.
*specific recommendation for submerged arc.

Protective Clothing

Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information

Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner unless otherwise noted.